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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/572,660

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EXAMINER

YAMNITZKY, MARIE ROSE

ART UNIT

PAPER NUMBER

1786

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/572,660	<b>Applicant(s)</b> TAKA ET AL.	
	<b>Examiner</b> Marie R. Yamnitzky	<b>Art Unit</b> 1786	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 26 October 2010.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-3 and 6-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 6-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                    | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)         | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                          |

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's amendment filed on October 26, 2010, which amends claims 1 and 14, has been entered.

Claims 1-3 and 6-16 are pending.

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 11, 12 and 15 stand rejected under 35 U.S.C. 102(b) as being anticipated by Tomiuchi et al. (GB 2 357 180 A).

See the entire document. In particular, see the abstract; page 3, last paragraph, through page 5, line 7; page 7, first two paragraphs; page 8, last paragraph, through page 12, third paragraph; and page 18, fifth paragraph.

Tomiuchi et al. disclose a fluorescent color conversion filter in which at least one organic fluorescent dye is enclosed by a cyclodextrin derivative. The cyclodextrin derivative meets the limitations of a multi-branched structure compound as required by the rejected claims and the organic fluorescent dye which is enclosed by the cyclodextrin derivative meets the limitations of a light emitting material per the rejected claims.

The composite of fluorescent dye enclosed by cyclodextrin derivative is formed by dissolving the fluorescent dye and cyclodextrin derivative in a solvent (e.g. see p. 12, third paragraph) per a method meeting the limitations of present claims 11, 12 and 15.

4. Claims 11, 12 and 15 stand rejected under 35 U.S.C. 102(e) as being anticipated by Kawaguchi et al. (US 2004/0051781 A1).

Kawaguchi et al. disclose a “fluorescence-conversion-dye-dendrimer clathrate body” which is made by a method that meets the limitations of present claims 11, 12 and 15. For example, see paragraphs [0024]-[0033] and [0036].

5. Claims 1-3 and 6-16 are rejected under 35 U.S.C. 102(b) as being anticipated by Bellmann et al. (US 2003/0068525 A1).

See the entire publication. In particular, see paragraphs [0002], [0005], [0021], [0026]-[0031], [0040]-[0060], [0071]-[0072] and [0134].

Bellmann et al. disclose various compounds that meet the limitations of a multi-branched structure compound per the present claims (e.g. see paragraphs [0047]-[0060]).

Bellman et al. disclose various structures within the scope of the core linkage group of the multi-branched structure compound as required for present claims 1-3 and 6-10. For example, tetraphenylmethanes of formula 1 on page 5 include the present C-9 structure, dendrimeric triphenylamines as taught in paragraph [0054] include the present C-10 structure, and the dendrimer compounds taught in paragraph [0056] include compounds which comprise the present C-2 structure. In addition, given that present claim 1 does not limit what is present at each of the asterisks in the depicted structures, Bellman's disclosure also meets the limitations of at least the present C-1 structure because a phenylene group is a component of many of Bellman's compounds having a multi-branched structure.

Bellmann et al. disclose these compounds for use as an amorphous, non-polymeric, organic matrix, in combination with a light emitting material, to form the light emitting layer of an organic electroluminescent device. The organic electroluminescent device comprises at least the light emitting layer disposed between a pair of electrodes (an anode and a cathode) as per present claim 6 and dependents. In the process of making the device, the components of the light emitting layer are combined in the form of a solution as per present claim 11 and dependents.

Bellmann et al. teach that the compounds used as the matrix material may have hole transporting properties as per present claims 2 and 13, or electron transporting properties as per present claims 3 and 14 (e.g. see paragraph [0043]). The exemplary structures taught in paragraphs [0047]-[0060] include some structures which inherently exhibit a positive hole transporting property and some structures which inherently exhibit an electron transporting property.

Exemplary light emitting materials include fluorescent compounds as per present claim 15 (e.g. Alq<sub>3</sub> and the lanthanide metal complexes taught in paragraph [0072]) and phosphorescent compounds as per present claims 1 and 16 (e.g. the cyclometallated iridium compounds taught in paragraph [0072]; paragraph [0045] also explicitly teaches “triplet emitters”, which is alternative terminology for phosphorescent compounds).

With respect to present claims 7-10, see paragraphs [0028]-[0029] for example.

6. Claims 1, 2, 6, 8-13, 15 and 16 are rejected under 35 U.S.C. 102(e) as being anticipated by Kitano et al. (US 2004/0109955 A1).

See the entire publication. In particular, see paragraphs [0010]-[0016], [0089]-[0091], [0117]-[0118], [0136], [0139], [0186]-[0210] and [0282]-[0284].

Kitano et al. disclose polymer compounds for use in the light emitting layer of an organic light emitting device comprising at least an organic light emitting layer disposed between an anode and a cathode (e.g. see paragraph [0191]). Various polymer structures are disclosed within the scope of Kitano’s formula (1) or formula (2) that meet the limitations of a multi-branched structure compound as required by the present claims.

Kitano et al. disclose structures within the scope of the core linkage group of the multi-branched structure compound as required for present claim 1 and dependents. For example, all of Kitano’s polymer compounds having Kitano’s formula (1) or formula (2) structure include the present C-10 structure. Each of the exemplary repeating units set forth in paragraphs [0089]-[0090] and [0117] also include the present C-1 structure, and some of these repeating units also

Art Unit: 1786

include the present C-2 structure. (Other structures such as the present C-7 or C-9 structures can be considered to be met by the prior art repeating units containing alkyl groups such as Me or Bu since present claim 1 does not limit what is present at each of the asterisks in the depicted structures).

Kitano's polymer compounds are inherently capable of transporting holes, thus meeting the further limitations recited in present claims 2 and 13. The polymer may be mixed with a light emitting material, which may be a fluorescent compound as per present claim 15, or a phosphorescent compound as per present claims 1 and 16 (e.g. see paragraphs [0193]-[0200]; paragraph [0199] provides two specific examples of phosphorescent Ir compounds as required by claim 1 and dependents).

Kitano's polymer compounds are taught as being soluble in various solvents, and a layer comprising the polymer may be formed by dissolving the polymer and any other desired components, such as light emitting material, in a solvent (e.g. see paragraphs [0139] and [0204]-[0205]).

With respect to present claims 8-10, see paragraph [0187] for example.

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 3, 7 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kitano et al. (US 2004/0109955 A1) as applied to claims 1, 2, 6, 8-13, 15 and 16 above, and for the further reasons set forth below.

With respect to present claim 7, Kitano et al. do not explicitly teach a device emitting white light, but teach that the light emitting device may be used for various purposes such as a “back light of a liquid crystal display, a light source of curved or flat surface for lighting” (paragraph [0187]). These are purposes for which a device emitting white light would be desirable. Further, Kitano et al. teach various light emitting materials that may be used in combination with Kitano’s polymer in the light emitting layer of the device, and it was well-known in the art at the time of the invention that white light emission can be achieved by selective combination of different light emitting materials in a single layer, or by providing a device with multiple light emitting layers which, in combination, are capable of providing white light emission. It would have been within the level of ordinary skill of a worker in the art to provide a white light emitting device utilizing Kitano’s multi-branched polymer structure in combination with one or more light emitting materials, and one of ordinary skill in the art would have been motivated to do so when the device was intended to be used for a purpose in which white light emission was desirable.

Kitano’s polymers are inherently capable of transporting holes as per present claims 2 and 13. Kitano et al. teach that the polymers may also comprise repeating units other than those of formula (1) or (2), and examples of these further repeating units include units which are inherently capable of transporting electrons as per present claims 3 and 14 (e.g. a metal complex



having 8-quinolinol or its derivative as a ligand as taught in paragraph [0127]). It would have been within the level of ordinary skill of a worker in the art at the time of the invention to make and use various polymer compounds within Kitano's disclosure, and to determine suitable combinations of repeating units selected from those taught in order to provide a functional light emitting device.

9. Applicant's arguments filed October 26, 2010 have been fully considered but they are not persuasive.

Claims 1 and 11 are independent claims. Claim 11 is broader than claim 1 with respect to the light emitting material and with respect to the multi-branched structure compound.

Regarding the Tomiuchi et al. reference (GB '180) and the rejection of claims 11, 12 and 15, applicant argues that Tomiuchi's cyclodextrin derivative is different from the multi-branched structure required in claim 11. It is not clear from applicant's arguments how/why Tomiuchi's cyclodextrin derivative does not meet the limitations of the "multi-branched structure compound" as broadly recited in claim 11, with claims 12 and 15 dependent therefrom. While independent claim 1 limits a core linkage group of the multi-branched structure compound, independent claim 11 does not. The cyclodextrin derivatives of Tomiuchi's disclosure have multiple branches.

Applicant further argues that Tomiuchi does not teach encapsulation of an Ir phosphorescent compound. This argument is not persuasive because claims 11, 12 and 15 do not require the light emitting material to be an Ir phosphorescent compound. Claims 11 and 12

merely require a light emitting material, and claim 15 further limits the light emitting material to a fluorescent compound (which is anticipated by Tomiuchi et al.).

Regarding the Kawaguchi et al. reference (US '781) and the rejection of claims 11, 12 and 15, applicant argues that the reference discloses a compound similar to the multi-branched compound of the present claim, but does not teach or suggest encapsulating an Ir phosphorescent compound or a method of encapsulating an Ir phosphorescent compound. These arguments are not persuasive because claims 11, 12 and 15 do not require an Ir phosphorescent compound. Kawaguchi et al. disclose a method meeting the limitations of claims 11, 12 and 15 wherein the light emitting material may be (in the case of claims 11 and 12), or is (in the case of claim 15), a fluorescent compound.

Regarding the Bellman et al. (US '525) and Kitano et al. (US '955) references, applicant argues that the references disclose compounds similar to the multi-branched compound of the present claim, but do not teach or suggest encapsulating an Ir phosphorescent compound or a method of encapsulating an Ir phosphorescent compound. Both of these references teach that Ir phosphorescent compounds may be used in combination with compounds meeting the limitations of the multi-branched compound required by the present claims. Applicant argues that encapsulation provides specific effects (referencing p. 72, l. 8-14, of the specification), and that these effects cannot be obtained by conventional mixing with a light emitting material. Applicant argues that Bellman et al. and Kitano et al. disclose conventional mixing, which does not meet the limitations of encapsulation of a light emitting substance as required by the present claims. These arguments are not persuasive because the present specification teaches that "the

Art Unit: 1786

organic electroluminescent light emission material is encapsulated in the multi-branched structure compound by mixing them in a solvent" (p. 72, l. 6-8; emphasis added). As further noted in the same paragraph, in the portion reproduced on pages 8 and 12 of applicant's response, the specific effects argued by applicant can be obtained "by using the multi-branched structure compound prepared by such the easy method" (emphasis added). Per the method of independent claim 11, encapsulation is achieved by the step of "mixing a light emitting material...and the multi-branched structure compound in a solvent" (emphasis added). Bellman et al. and Kitano et al. teach materials meeting the limitations of the presently required multi-branched compound, teach materials meeting the limitations of the presently required light emitting material, and teach mixing them in a solvent.

10. Any inquiry concerning this communication should be directed to Marie R. Yamnitzky at telephone number (571) 272-1531. The examiner works a flexible schedule but can generally be reached at this number from 7:00 a.m. to 3:30 p.m. Monday and Wednesday-Friday.

The current fax number for all official faxes is (571) 273-8300. (Unofficial faxes to be sent directly to examiner Yamnitzky can be sent to (571) 273-1531.)

/Marie R. Yamnitzky/  
Primary Examiner, Art Unit 1786

MRY  
March 18, 2011